

# **Oil and Gas Conservation Commission OF THE STATE OF MONTANA**

**TIM BABCOCK**  
GOVERNOR



**ANNUAL REVIEW FOR THE YEAR 1967**

**Relating to**

## **OIL AND GAS**

**Volume 11**

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## Annual Review for the Year 1967

## Volume 11

### INTRODUCTION

This is the eleventh Annual Review of drilling and producing operations in Montana.

Oil production in Montana during 1967 was 34,959,000 barrels. This was not quite as high as the 1966 record production of 35,380,000 barrels. Estimated Montana recoverable reserves were considerably increased to 452 million barrels as compared to 393 million barrels a year ago.

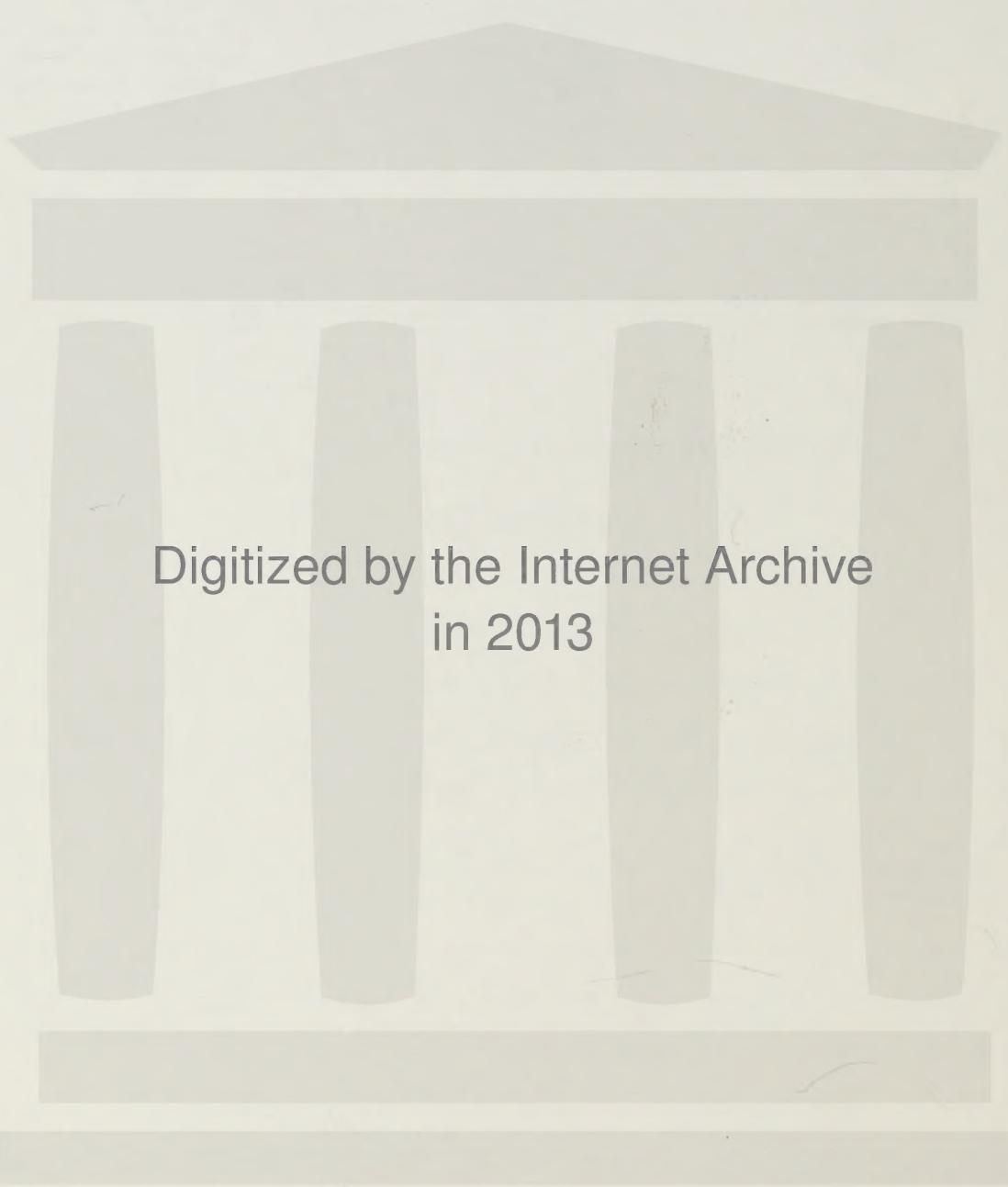
During 1967 there were 483 wells drilled in Montana. Of these, 203 were exploratory and 280 were development wells. Exploratory drilling resulted in 7 oil discoveries, 5 gas discoveries and 191 dry holes. Development drilling resulted in 162 oil wells, 14 gas wells and 104 dry holes.

There were several major discoveries in Montana during 1967. Most important was the extraordinary oil production found in the Muddy sand formation in the Powder River Basin in southeastern Montana. This discovery resulted in the delineation of the Bell Creek Field comprising 68 sections and touched off lease and drilling activity over the entire Powder River Basin. This activity started in the latter part of 1967 and was rapidly increasing by the year's end.

In eastern Montana the Winnipegosis formation was found to be productive in two Red River producing fields. Interest in the Winnipegosis was revived by the successful acid stimulation of an old well in the Redstone Field in northeastern Montana. There was also a significant discovery of oil from the Amstden formation in the old Cat Creek Field.

Exploratory efforts resulted in the discovery of large shallow gas reserves in the Eagle sand formation on the north flank of the Bearpaw Mountains in north central Montana. Approximately 28 gas wells were completed during 1967 in a three-county area. There is as yet no gas pipeline into the area.

Five waterflood projects were started in 1967. One large project in the Pine Field of Dawson and Prairie counties was still under construction at the end of the year. Approximately 5.2 million barrels, or 15 per cent, of total Montana production during 1967 was incremental production from secondary recovery projects.



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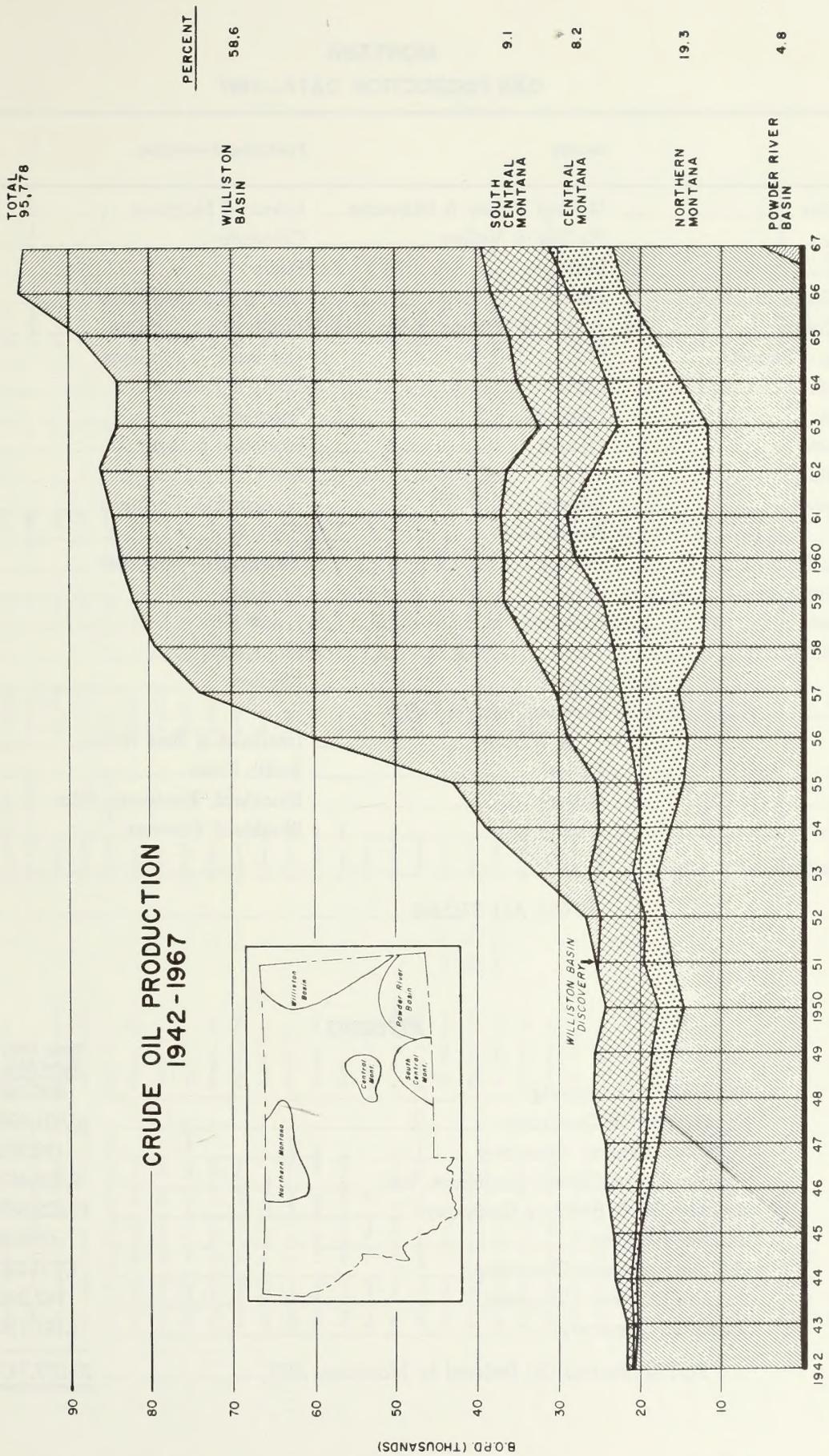
## FIVE YEAR SUMMARY

	1963	1964	1965	1966	1967
Production, Northern Montana—Bbls.	4,530,510	5,705,948	6,826,261	7,991,302	6,758,280
South Central—Bbls.	3,383,587	3,699,927	3,597,647	3,392,890	3,181,132
Central—Bbls.	3,950,490	3,269,768	2,849,923	2,710,194	2,872,604
Williston Basin—Bbls.	19,005,066	17,971,855	19,504,287	21,285,732	20,475,733
Powder River Basin—Bbls.					1,671,277
<b>TOTAL</b>	<b>30,869,653</b>	<b>30,647,498</b>	<b>32,778,118</b>	<b>35,380,118</b>	<b>34,959,026</b>
No. of Producing Wells, Northern Montana					
South Central	2,550	2,216	2,649	2,308	2,097
Central	82	88	101	106	96
Williston Basin	310	317	306	301	286
Powder River Basin	700	708	754	792	802
<b>TOTAL</b>	<b>3,642</b>	<b>3,329</b>	<b>3,810</b>	<b>3,507</b>	<b>3,390</b>
Average Daily Production/Well—BOPD,					
Northern Montana	4.9	7.4	7.1	9.5	8.8
South Central	113.4	115.1	97.6	87.7	90.7
Central	34.8	28.8	25.5	24.7	27.5
Williston Basin	74.4	65.7	70.9	73.6	69.9
Powder River Basin					70.6
<b>STATE AVERAGE</b>	<b>23.2</b>	<b>25.2</b>	<b>23.6</b>	<b>27.6</b>	<b>28.2</b>
Development Wells Drilled, Oil Wells					
Gas Wells	131	100	177	179	162
Dry Holes	6	7	9	9	14
<b>TOTAL</b>	<b>197</b>	<b>109</b>	<b>107</b>	<b>96</b>	<b>104</b>
Exploratory Wells Drilled, Oil Wells					
Gas Wells	8	22	14	10	7
Dry Holes	5	3	1	3	5
<b>TOTAL</b>	<b>152</b>	<b>150</b>	<b>199</b>	<b>185</b>	<b>191</b>
TOTAL WELLS DRILLED	165	175	214	198	203
TOTAL FOOTAGE DRILLED	362	391	507	482	483
AVERAGE DEPTH OF ALL WELLS	1,906,976	1,863,155	2,328,865	2,211,369	2,158,964
	5,268	4,765	4,593	4,588	4,470

**SUMMARY OF DRILLING BY COUNTIES—1967**  
**STATE OF MONTANA**

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County	Wildcats			Development			Total Wells Drilled	Footage Drilled	Avg. Depth Per Well
	Dry	Oil	Gas	Dry	Oil	Gas			
Big Horn	3	0	0	3	3	0	9	39,587	4,399
Blaine	24	0	1	7	0	7	39	74,274	1,904
Carbon	5	1	0	0	3	0	9	29,745	3,305
Carter	15	0	1	0	0	1	17	74,979	4,411
Cascade	1	0	0	0	0	0	1	4,892	4,892
Chouteau	4	0	1	0	0	0	5	12,654	2,531
Custer	2	0	0	1	0	1	4	20,618	5,155
Daniels	1	1	0	4	4	0	10	72,604	7,260
Dawson	2	0	0	2	8	0	12	121,975	10,165
Fallon	0	0	0	1	7	0	8	70,567	8,821
Fergus	1	0	0	0	0	0	1	5,990	5,990
Garfield	4	0	0	0	0	0	4	24,664	6,166
Glacier	5	0	0	9	12	2	28	87,028	3,108
Hill	9	0	0	6	0	1	16	42,397	2,650
Liberty	12	0	1	4	3	1	21	59,882	2,852
McCone	3	0	0	2	0	0	5	33,052	6,610
Musselshell	8	1	0	8	6	0	23	116,335	5,058
Petroleum	3	0	0	0	1	0	4	15,235	3,809
Phillips	5	0	0	0	0	0	5	16,380	3,276
Pondera	12	0	0	3	3	0	18	45,052	2,503
Powder River	18	1	1	12	86	1	119	561,177	4,716
Prairie	0	0	0	1	0	0	1	9,135	9,135
Richland	2	0	0	1	2	0	5	59,600	11,920
Roosevelt	3	1	0	5	1	0	10	74,370	7,437
Rosebud	7	0	0	4	3	0	14	67,794	4,842
Sheridan	9	1	0	8	10	0	28	225,390	8,050
Stillwater	1	1	0	0	1	0	3	6,955	2,318
Teton	4	0	0	0	0	0	4	10,505	2,626
Toole	24	0	0	21	7	0	52	218,031	2,462
Treasure	1	0	0	0	0	0	1	5,893	5,893
Valley	1	0	0	0	0	0	1	4,900	4,900
Yellowstone	2	0	0	2	2	0	6	37,304	6,217
<b>TOTALS</b>	191	7	5	104	162	14	483	2,158,964	4,470



**MONTANA**  
**GAS PRODUCTION DATA—1967**

Field	County	Producing Formations	1967 Production M.C.F.
Big Coulee	Golden Valley & Stillwater	Lakota & Morrison	987,982
Bowdoin	Phillips & Valley	Colorado	2,071,723
Bowes	Blaine	Eagle	569,069
Cabin Creek	Fallon	Interlake & Red River	1,280,122
Cedar Creek	Fallon & Wibaux	Judith River & Eagle	3,248,019
Cut Bank & Reagan	Glacier & Toole	Cut Bank & Madison	9,497,010
Dry Creek	Carbon	Eagle & Frontier	418,735
Elk Basin	Carbon	Tensleep	1,265,902
Flat Coulee	Liberty	Blackleaf & Swift	118,397
Gold Butte	Toole	Swift	28,216
Grandview	Liberty	Blackleaf & Kootenai	86,517
Hardin	Big Horn	Frontier	43,377
Keith Block	Liberty	Blackleaf & Sawtooth	3,577,914
Kevin Sunburst	Toole	Kootenai	647,816
Lake Basin	Stillwater	Frontier	1,275,934
Middle Butte	Toole	Blackleaf	29,759
Mt. Lilly	Liberty	Madison	328,053
Pine	Dawson, Prairie, Fallon & Wibaux	Interlake & Red River	820,433
Plevna	Fallon	Judith River	139,162
Utopia	Liberty	Blackleaf, Kootenai, Ellis	1,063,949
Whitlash	Liberty	Blackleaf, Kootenai	1,493,870
Miscellaneous			2,005,595
<b>TOTAL ALL FIELDS</b>			<b><u>30,997,554</u></b>

**REFINING**

	<b>Year 1967 Total Bbls.</b>
Big West Oil Company	966,769
Continental Oil Company	10,801,598
Diamond Asphalt Company	172,705
Farmers Union Central Exchange, Inc.	7,439,467
Humble Oil & Refining Company	13,923,889
Jet Fuel Refinery	64,619
Phillips Petroleum Company	1,770,236
Tesoro Petroleum Company	747,308
Union Oil Company	1,191,156
<b>TOTAL Barrels Oil Refined in Montana, 1967</b>	
	<b><u>37,077,747</u></b>

**SUMMARY OF ACTIVE SECONDARY RECOVERY PROJECTS**  
 (DATE EFFECTIVE TO JANUARY 1, 1968)

Field, Formation	Operator	Type of Project	Injection Pattern	Date Injections Commenced	Cumulative Injections 1000's Bbls. or MCF	Dec. 1967 Avg. Daily Injection Rate	No. of Injection Wells	Source of Injection Media & Remarks
Ash Creek, Shannon	McDermott	Waterflood	Periphial	10-15-64	384	381	4	Parkman, Data for Montana portion.
Big Wall, Tyler B	Texaco, Inc.	"	Modified Periphial	8-20-66	2,553	4,737	3	Produced water from Ansden & Tyler
Bowes, Sawtooth	Texaco, Inc.	"	Dispersed Pilot	5-23-61	2,193	1,928	5	Madison
Cabin Creek, Siluro-Ordovician	Shell Oil	"	Modified Periphial	6-12-59	21,774	20,885	16	Produced Water & Fox Hills
Cat Creek, 1st & 2nd CC (Unit 1)	Continental Oil	"	Periphial	10-10-62	5,692	2,795	4	Third Cat Creek
Cat Creek, 1st & 2nd CC (Unit 2)	Continental Oil	"	Periphial	12-1-59	14,999	2,638	8	Third Cat Creek
Coral Creek, Siluro-Ordovician	Shell Oil	"	Modified Periphial	4-67	1,263	5,834	9	Minnelusa
Cut Bank, NE Unit, Cut Bank	Texaco, Inc.	"	5-Spot	9-2-63	6,332	2,147	33	Madison
Cut Bank, NW Unit, Cut Bank	Humble Oil	"	5-Spot	1-30-62	8,121	5,386	31	Madison
Cut Bank, So. Central, Cut Bank	Union Oil	"	5-Spot	5-63	10,243	7,636	39	Madison
Cut Bank, SE Unit, Cut Bank	Texaco, Inc.	"	5-Spot	4-62	14,819	14,053	49	Madison
Cut Bank, SW Unit, Cut Bank	Phillips Petr.	"	5-Spot	9-62	7,553	10,555	55	Madison
Cut Bank, Tribal, Lander	Humble Oil	"	Dispersed	6-51	4,260	184	3	Eagle
Cut Bank, H. C. Lander, Lander	Humble Oil	"	Dispersed	4-65	533	504	2	Eagle
Cut Bank, Lander Sand, Lander	Texaco, Inc.	"	Dispersed	7-64	1,640	2,024	6	Eagle
Cut Bank, McGuiness-Houlton	Union Oil	"	Dispersed	12-62	1,399	807	1	Madison
Cut Bank, Cut Bank SS	Miami Oil	"	5-Spot	12-67	18	17,860	15	Madison
Darling, State Unit, Houlton	B. G. & O. Co.	"	Dispersed	2-67	172	725	1	Madison
Darling, Swenson Unit, Houlton	B. G. & O. Co.	"	Dispersed	2-67	404	1,220	2	Madison
Elk Basin, Frontier	Pan American	Gas Inj.	Crestal	1926	All injection wells in Wyoming	Purchased Gas		
Elk Basin, Embarr-Tensleep	Pan American	Gas Inj.	Crestal	1949	All injection wells in Wyoming	Inert Gas		
Elk Basin, Madison	Pan American	Waterflood	Periphial	1962	17,714	9,128	5	Madison
Elk Basin, NW Unit, Frontier	Sinclair Oil	"	Periphial	10-57	3,332	1,072	4	Madison
Elk Basin, NW Unit, Tensleep	Sinclair Oil	"	Modified Periphial	5-67	128	674	1	Produced Water=Madison
Keg Coulee West, Tyler B	Pan American	"	One Well Pilot	8-31-66	842	1,475	1	Madison
Kevin-Sunburst, Madison	Lon Crumley	"	Dispersed	9-63	319	295	1	Madison
Kevin-Sunburst, Madison	Texaco, Inc.	"	Periphial	8-64	2,122	2,286	10	Madison
Kevin-Sunburst, Madison	Juniper Oil	"	Dispersed	8-64	362	1,080	7	Madison
Kevin-Sunburst, Madison	Cardinal Petroleum	"	Dispersed	6-65	295	794	2	Madison
Little Beaver, Siluro-Ord.	Shell Oil	"	Semi-Periphial	8-7-66	3,097	7,000	12	Minnelusa
Little Beaver East, Siluro-Ord.	Shell Oil	"	Semi-Periphial	4-65	2,106	3,253	5	Minnelusa
Hobby Dome, Swift	Farmers Union	"	One Well Pilot	7-67	119	25,396	4	Third Cat Creek
Pine, Siluro-Ordovician	Shell Oil	"	Semi-Periphial	3-59	36,980	18,598	30	Fox Hills & Produced Water
Pondera, Madison	Phillips Petr.	"	Dispersed	8-61	799	206	2	Madison
Ragged Point, Tyler A	Juniper Oil	"	Modified Periphial	2-3-66	1,538	1,600	5	Third Cat Creek
Reagan, Madison	Union	Gas Inj.	Crestal	8-61	2,077	920	4	Produced Gas
Red Creek, Cut Bank	Humble Oil	Waterflood	5-Spot	6-65	2,123	3,333	9	Madison
Richey SW, Dawson Bay-Interlake	Sinclair Oil	"	Dispersed	12-65	711	1,340	3	Fox Hills
Stensvad, Tyler B	Pan American	"	Periphial	2-63	7,347	5,355	5	Mission Canyon

OIL AND GAS DISCOVERIES IN 1967

County	Operator—Well Name and Location	Field	Total Depth	Initial Potential Gas MCF		Producing Formation
				Oil B/D	Gas MCF	
Blaine	High Crest Oil Co., O'Neil 1, SE NE 1-31N-17E	Tiger Ridge	1,340		3,100	Eagle
Carbon	Development Serv., George 1, SE SW 32-5S-18E	Dean Dome	2,890	26		Lakota
Carter	Sinclair Oil & Gas, Espy 6-1, SE SE 6-8S-55E	Bell Creek	4,476		15,000	Muddy
Chouteau	Union Texas Petroleum, Godfrey 1, NE SW 5-25N-16E	Unnamed	857		162	Madison
Daniels	Champlin Oil & Refining, R. Foster 1, NE NE 22-34N-50E	Smoke Creek	7,817	142		Charles "C"
Liberty	Pel-Tex Pet. Co., Inc., Anderson 1, SE NW 9-34N-4E	Grandview	2,696		118	Bow Island, Madison
Musseelshell	McAlester Fuel Co., Drees 2-29, NW NE 29-10N-31E	Hiawatha	5,148	121		L. Tyler Stensvad
Powder River	Exeter Drilling, Hayes 1, NW NW 12-9S-54E	Unnamed	4,873			Muddy
Powder River	Exeter Drilling, Federal-McCarrel 33-1, NE NE 33-8S-54E	Bell Creek	4,975	207		Muddy
Roosevelt	Murphy Oil Corp., Red Fox 1, SE NE 17-30N-48E	Tule Creek	7,774	443		Nisku
Sheridan	Jayhawk Exploration, Bonnifield 1, NE NW 31-32N-58E	Unnamed	7,866	148		Ratcliffe
Stillwater	Farmers Union, Larson 12X-17, SW NW 17-5S-17E	Dean Dome	2,825	30		Greybull

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>ARCH APEX</b> Blockleaf (Gas) (Cret.)	13	Strat.	Volumetric	(Blackleaf Gas Pool) 330' from legal subdivision; 2500' from any other drilling or producible gas well producing from the same reservoir; 75' topographic tolerance. (Order 4-60.)	None
<b>ASH CREEK</b> Shannon (Upper Cret.)	4	Anticline	Partial Water Drive and Depletion	Spacing waived within unitized portion of field except no well may be drilled closer than 660' from unit boundary. (Order 4-65.)	Waterflood started October, 1964. (Orders 22-64, 15-66.)
<b>BANNATYNE</b> Swift (Jurassic)	6	Anticline	Comb. Water Drive and Volumetric	Center of 10-acre tracts, 50' topographic tolerance. Commencing permitted. (Order 20-58.)	Pilot waterflood of Swift suspended in 1963.
<b>Madison (Miss.)</b>	3	Anticline	Water Drive		
<b>BASCOM</b> Tyler (L. Penn.)	1	Structural	Depletion	State-wide. (Order 10-63.)	None
<b>BEARS DEN</b> Kootenai (L. Cret.)	7	Anticline	Depletion and Gas Cap Drive	State-wide.	None
<b>BELL CREEK</b> Muddy (Cret.)	184	Strat.	Depletion	40-acre spacing units with 150' topographic tolerance from center of quarter-quarter section. 300 barrel per well per day MER. Semi-annual bottom-hole pressure surveys. Quarterly gas-oil ratio tests. (Orders 37-67, 39-67, 50-67.)	None
<b>BENRUD</b> Nisku (Devonian)	1	Structural	Water Drive	(Nisku) 160-acre spacing units with permitted location within a 1320' square in center of quarter section. (Order 6-65.)	Water disposal into Judith River formation. (Order 64-62.)
<b>BENRUD, EAST</b> Nisku (Devonian)	1	Structural	Water Drive	(Nisku) Same as Benrud Field. (Order 6-65.)	Water disposal into Judith River formation. (Order 64-62.)
<b>BENRUD, NORTHEAST</b> Nisku (Devonian)	1	Structural	Water Drive	(Nisku) Same as Benrud Field. (Order 6-65.)	Water disposal into Judith River formation. (Order 32-66.)
<b>BERTHELOTE</b> Sunburst (L. Cret.)	1	Strat.	Depletion	(Sunburst) 40-acre spacing units with well no closer than 330' from lease or property line and not closer than 660' between wells. (Order 18-66.)	None

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>BIG COULEE</b> 3rd Cat Creek (L. Cret.) (Gas) Morrison (U. Jur.) (Gas)	3	Structural	Water Drive	State-wide.	None
<b>BIG WALL</b> Amsden (Penn.) Tyler (Penn.)	4	Structural	Water Drive	Amsden and Tyler spaced by old state-wide spacing; 330' from lease or property line, 990' between wells in same reservoir. (Order 12-34.)	Previous disposal into Tyler "A" stopped in 1961. Waterflood of Tyler "B" sand started August, 1966. (Order 22-66.)
<b>BLACKFOOT</b> Cut Bank (L. Cret.) Madison (Miss.)	5	Strat.	Depletion	(Cut Bank and Madison) One well only per 40-acre spacing unit, 300' tolerance from center of spacing unit. Dual completion in Cut Bank and Madison with administrative approval. (Order 3-57.)	None
<b>BLACKFOOT, EAST</b> Cut Bank (L. Cret.)	1	Strat.	Depletion	(Cut Bank) 40-acre spacing units. Location no closer than 330' from spacing unit boundary. (Order 41-65.)	None
<b>BORDER</b> Cut Bank (L. Cret.) Moulton (L. Cret.)	7	Strat.	Depletion	(Moulton, Sunburst & Cut Bank) Oil: 220' from boundary of legal subdivision and 430' between wells in same formation; 75' topographic tolerance. Gas: 330' from boundary of legal subdivision, 2400' between wells in same formation on same lease. 75' topographic tolerance. (Order 7-54.)	None
<b>BOWDOIN</b> (Gas) Bowdoin & Phillips sands in Colorado (Cret.)	349	Structural	Volumetric	(Gas only) One well per quarter section not less than 1,000' from lease boundary or less than 2000' from any gas well in same horizon. (Order 29-55.)	None
<b>BOWES</b> Eagle (U. Cret.) (Gas) Sawtooth (Jurassic)	21	Structural	Volumetric	(Eagle & Virgelle) (Gas) 660' from boundary of legal subdivision, 1320' from other wells in same formation. 75' topographic tolerance. (Order 23-54.) (Sawtooth) 330' from lease or property line, 990' between wells in same formation. (Order 13-54.)	None
<b>BRADY</b> Sunburst (L. Cret.)	5	Strat.	Depletion	(Brady Sand Pool) 10-acre spacing units with 75' topographic tolerance from center of spacing unit. (Order 34-62.)	None

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>CABIN CREEK</b> Mission Canyon (Miss.)	20	Structural	Water Drive	Spacing waived and General Rules No. 213 (Deviation), 218 (Commingling), and 219 (Dual Completion) are suspended until present Unit Agreement becomes inoperative. (Order 36-62.)	Waterflood of Siluro-Ordovician reservoir has been expanded to a full scale peripheral flood. (Orders 60-62; 30-63.)
<b>CAT CREEK</b> Kootenai (L. Cret.)	93	Structural	Depletion	(Kootenai, Morrison & Ellis) 220' from lease or property line, 440' from every other well in same formation. (Order 17-55.) Amsden: State-wide.	Two Kootenai waterfloods and one Ellis pilot waterflood in progress. (Orders 17-56, 18-59, 13-62.)
Morrison (U. Jur.)	7	Structural	Depletion		
Ellis (U. Jur.)	45	Structural	Depletion		
Amsden (Penn.)	1	Structural	Unknown		
<b>CEDAR CREEK</b> Judith River (Gas)	176	Structural	Volumetric	(Judith River) Gas: 1200' from legal subdivision line, 2400' from every other well in same formation. (Order 33-54.) (Eagle) 320-acre spacing units. Wells in center of NW $\frac{1}{4}$ and SE $\frac{1}{4}$ of each section with 200' topographic tolerance. (Order 1-61.)	None
Eagle (U. Cret.) (Gas)	62	Structural	Volumetric		
<b>CONRAD, SOUTH</b> Dakota (L. Cret.)	2	Strat.	Depletion	(Dakota) 10-acre spacing units. Wells in center of each unit with 75' topographic tolerance. (Orders 34-62 & 31-63.)	None
<b>CUPON</b> Red River (Ordovician)	1	Structural	Water Drive	(Red River) 80-acre spacing units consisting of E $\frac{1}{2}$ and W $\frac{1}{2}$ of quarter section; well location in SE $\frac{1}{4}$ and NW $\frac{1}{4}$ of quarter section with 75' topographic tolerance. (Order 31-55.)	None
<b>CUT BANK</b> Kootenai (L. Cret.)	1,139	Strat.	Depletion	(Moulton, Sunburst, Cut Bank, Madison) Oil: 330' from legal subdivision line, 650' between wells in same formation, 5-spot on 40-acre tract permitted. 75' topographic tolerance. (Order 10-54.) Gas: 330' from legal subdivision, 2400' between wells in same formation, 75' topographic tolerance. (Order 10-54.)	There are 12 Kootenai sand waterfloods in progress.
Madison (Miss.)	39	Strat.	Water Drive		

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>DEER CREEK</b> Interlake (Silurian) Red River (Ordovician)	2 1	Structural Structural	Water Drive Water Drive	(Interlake and Red River) 80-acre spacing units consisting of any two adjacent quarter-quarter sections. Well location in NE 1/4 and SW 1/4 of each quarter section with 75' topographic tolerance. (Orders 23-55 & 14-59.) Commencing of production permitted upon approval of Comm. Petr. Engr. (Order 18-63.)	Excess produced water is disposed into Dakota and Lakota formations. (Orders 6-56 & 3-58.)
<b>DELPHIA</b> Amsden (Penn.)	1	Structural	Water Drive	State-wide.	None
<b>DEVIL'S BASIN</b> Heath (U. Miss.)		Shut-in	Structural	Depletion	State-wide.
<b>DEVON</b> (Gas) Blackleaf (L. Cret.)		Shut-in	Strat.	Volumetric	State-wide
<b>DRY CREEK</b> Frontier (U. Cret.) (Gas) Eagle (U. Cret.) (Gas) Greybull (L. Cret.) (Gas) Greybull (Cret.) (Oil)			Structural Structural Structural Structural	Volumetric Volumetric Volumetric Depletion	State-wide.
<b>DWYER</b> Mission Canyon (Miss.)	15	Structural	Water Drive	(Madison) 160-acre spacing units; well location in SE 1/4 of spacing unit with 75' topographic tolerance. (Orders 25-60, 29-61.)	Produced water disposed into Dakota formation. (Order 26-63.)
<b>ELK BASIN</b> (Mont. Portion) Frontier (U. Cret.) Embar-Tensleep (Perm., Penn.) Darwin (Penn.) Madison (Miss.) Jefferson (Dev.)	5 27 1 24 1	Structural Structural Structural Structural Structural	Gravity Drainage Gravity Drainage Unknown Water Drive Water Drive	Rule No. 203 (Spacing) is waived within Unit Area. (Order 10-61.)	Frontier: Crestal gas injection. Embar-Tensleep: Pressure maintenance by crestal gas injection. Waterflood approved in 1966. Madison: Water injection. Jefferson: None.
<b>ELK BASIN, NORTHWEST</b> Frontier (U. Cret.) Embar-Tensleep (Perm., Penn.) Madison (Miss.)	6 6 2	Structural Structural Structural	Depletion Gravity Drainage Water Drive	Spacing waived within unitized portion except that bottom of hole be no closer than 330' from unit boundary and there be at least 1320' surface distance between wells in same formation; 75' topographic tolerance. (Orders 43-63, 28-64.)	Frontier: Waterflood in progress. Embar-Tensleep: Waterflood in progress. Madison: None.

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>FAIRVIEW</b> Winnipegosis (Dev.) Red River (Ordovician)	1 4	Structural Structural	Water Drive Water Drive	(Red River & Winnipegosis) 160-acre spacing unit. Well location anywhere in spacing unit but no closer than 660' from unit boundary. (Orders 48-65, 1-67, 43-67, 44-67.)	None
<b>FERTILE PRAIRIE</b> Red River (Ordovician)	3	Structural	Water Drive	(Red River) 80-acre spacing units consisting of north-south rectangular units. Well location in NW 1/4 and SE 1/4 of quarter section with 75' topographic tolerance. (Orders 3-56, 7-62.)	None
<b>FLAT COULEE</b>					
Bow Island (Cret.) (Gas)	4	Structural and Strat.	Depletion	(Bow Island) Gas: 330' from boundary of legal subdivision and 1320' from other wells in same reservoir. (Order 16-55.)	None
Dakota (Cret.) (Gas)				(Dakota) State-wide.	
Swift (Jur.) (Gas)	1	Strat. Strat.	Depletion Depletion	(Swift) Gas: State-wide gas spacing.	
Swift (Jur.) (Oil)	32	Shut-in Strat.	Depletion	(Swift) Oil 40-acre spacing units. Well in center of spacing unit with 150' topographic tolerance. Orders 16-62, 19-63.)	
<b>FLAT LAKE</b> Madison-Ratcliffe (Miss.)	57	Structural and Strat.	Partial Water Drive	(Ratcliffe) 160-acre spacing units; well location in center of NE 1/4 of quarter section with 200' topographic tolerance. Wells no closer than 961' to No. Dakota state line and no closer than 1600' to Canadian line. (Orders 10-65 amended, and 43-65.)	Excess produced water disposed into Muddy, Dakota, or Lakota formations. (Orders 39-64, 39-66.)
<b>FLAT LAKE, SOUTH</b> Madison-Ratcliffe (Miss.)	1	Structural and Strat.	Partial Water Drive	(Ratcliffe) Same as Flat Lake spacing. (Order 2-67.)	None
<b>FRANNIE</b> (Mont. Portion) Tensleep (Penn.)	2	Structural	Comb. Water Drive and Gravity Drainage	(Tensleep) 10-acre spacing units; well location in center of each unit with 100' topographic tolerance. (Order 35-63.)	None
<b>FRED &amp; GEORGE CREEK</b> Sunburst (L. Cret.)	22	Strat.	Depletion	(Sunburst) Oil: 40-acre spacing units; well location in center of unit with 250' topographic tolerance. (Orders 29-63, 1-65.)	None
Swift (U. Jur.)	19	Strat.	Depletion	(Swift) State-wide.	
<b>GAGE</b> Amsden (Penn.)	2	Structural	Water Drive	State-wide.	None

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules		Secondary Recovery or Water Disposal
				Temporary 160-acre spacing expired, State-wide spacing now applies. (Order 50-65.)	Excess produced water disposed into Judith River formation. (Orders 32-61, 20-64.)	
<b>GAGE, SOUTHWEST</b> Amsden (Penn.)	1	Unknown	Water Drive			None
<b>GAS CITY</b> Red River (Ordovician)	24	Structural	Water Drive	80-acre spacing units consisting of E 1/2 and W 1/2 of quarter sections; well location in NW 1/4 and SE 1/4 of quarter section; 150' topographic tolerance. Spacing waived and state-wide rules 213 (Deviation), 218 (Commingling) and 219 (Dual Completion) are waived in unitized portion of field. (Order 29-62.)		
Charles (Miss.)	1	Structural	Unknown			
<b>GLENDIVE</b> Stony Mountain, Red River (Ordovician)	13	Strat. and Structural	Water Drive	(Stony Mountain, Red River) 80-acre spacing units consisting of any two adjacent quarter-quarter sections; wells located in center of NE 1/4 and SW 1/4 of each quarter section with 75' topographic tolerance. (Orders 27-55, 19-62, 58-62, 20-66.)		
<b>GOOSE LAKE</b> Ratcliffe (Miss.)	30	Structural and Strat.	Partial Water Drive	(Ratcliffe) 160-acre spacing units; well locations according to areas: Area I, center of NW 1/4 of quarter section; Area II, center of SE 1/4 of quarter section; Area III, center of NE 1/4 of quarter section. 200' topographic tolerance. (Orders 42-63, 40-66.)		
<b>GRABEN COULEE</b> Sunburst (L. Cret.)	0	Structural and Strat.	Depletion	(Sunburst) Oil: 40-acre spacing units; well location no closer than 330' from legal subdivision.	None	
Cut Bank (L. Cret.)	20	Structural and Strat.	Depletion	(Cut Bank and Madison) Oil: 330' from boundary of legal subdivision and 650' from other well in same reservoir and on same lease. 75' topographic tolerance. (Order 73-62.)		
Madison (Miss.)	22	Structural and Strat.	Depletion			
<b>GRANDVIEW</b> Bow Island (Cret.) (Gas) Swift (U. Jur.) (Gas) Madison (Miss.) (Gas)	1	Structural	Unknown	Gas: (All formations.) 320-acre spacing units aligned in a north-south direction; well locations no closer than 660' to a spacing unit boundary. (Order 49-67.)	None	
	1	Structural	Unknown			
	1	Structural	Unknown			
<b>GYPSY BASIN</b> Sunburst (L. Cret.)	3	Structural and Strat.	Comb. Water Drive and Depletion	(Sunburst) Oil: 330' from lease lines and 660' between wells in same formation. Only two wells per quarter-quarter section. (Order 7-66.)		
Swift (U. Jur.)	1	Structural and Strat.	Comb. Water Drive and Depletion	(Swift) Oil: Same as Sunburst.		
Sawtooth-Madison (Jur. & Miss.)	5	Structural and Strat.	Comb. Water Drive and Depletion	(Sawtooth-Madison) Oil: 40-acre spacing units; wells no closer than 330' from lease line. (Order 7-66.)		
				(Sunburst and Madison) Gas: 160-acre spacing units; well locations in center of any quarter-quarter section in each 160-acre unit, 2340' between gas wells. 150' topographic tolerance. (Order 13-59.)		

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>HARDIN</b> Frontier (Cret.) (Gas)	38	Strat.	Volumetric	State-wide.	None
<b>HIAWATHA</b> Tyler (L. Penn.)	5	Structure	Depletion	State-wide.	None
<b>HIBBARD</b> Amsden (Penn.)	1	Unknown	Water Drive	State-wide.	None
<b>IVANHOE</b> Morrison (U. Jur.)	1	Structural and Strat.	Depletion	40-acre spacing unit for production from any one common formation; well location in center of unit with 200' topographic tolerance. (Order 7-60.)	Waterflood of Tyler B & C discontinued.
Amsden (L. Penn.)	2	Structural and Strat.	Water Drive		
Tyler (L. Penn.)	9	Structural and Strat.	Depletion		
<b>KEG COULEE</b> Tyler (Penn.)	28 /	Strat.	Depletion	(Tyler) 40-acre spacing in southwest portion of field except that spacing is waived in unutilized portion. (Orders 3-64, 4-64, 23-64.) 80-acre spacing in remainder of field with variable pattern. (Orders 11-60, 28-62.) Topographic tolerance varies from 100' to 150'. (Orders 11-60, 4-64, 23-64.) Buffer zone waived. (Order 16-65.)	A waterflood of Tyler C sand in the unutilized northwest portion of the field was commenced in August, 1967. (Orders 3-64, 28-66.)
<b>KEG COULEE, NORTH</b> Tyler "B" (Penn.)	3	Strat.	Depletion	40-acre spacing units; well location in center of spacing unit with 150' topographic tolerance. (Order 46-64.) Buffer zone waived (Order 16-65.)	None
<b>KEITH, EAST</b> (Gas) Blackleaf & Sawtooth (Gas) (Cret. & Jur.)	12	Structural	Water Drive	(Blackleaf & Sawtooth) State-wide gas spacing except in unutilized portions that were spaced by Order 22-62.	None
<b>KELLEY</b> Tyler (Penn.)	2	Strat.	Depletion	State-wide.	None
<b>KEVIN-SUNBURST</b> Madison, Sunburst (Miss., L. Cret.)	679+	Strat.	Depletion	9 wells per 40-acre tract; only 3 wells on any side of tract set back at least 220' from line. Field delineated by Orders 8-54, 28-55.	There are four waterfloods in operation.
<b>LAKE BASIN, NORTH</b> Eagle, Frontier (Cret.) (Gas)	4	Structural	Unknown	(Frontier, Eagle) Gas: 640-acre gas spacing units consisting of one section. Well locations in center of NW 1/4 or SE 1/4 of each section with 75' topographic tolerance. (Order 6-58.)	None

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Secondary Recovery or Water Disposal	
				Spacing and Field Rules	Regulations
<b>LITTLE BEAVER</b> (Mont. Portion) Red River (Ordovician)	29	Structural	Comb. Depletion and Water Drive	Spacing waived and General Rules No. 213 (Deviation), 218 (Commingling) and 219 (Dual Completion) are suspended until present Unit Agreement becomes inoperative. (Order 41-62.)	Waterflood of the Red River was commenced in August, 1967.
<b>LITTLE BEAVER, EAST</b> (Mont. Portion) Red River (Ordovician)	14	Structural	Comb. Depletion and Water Drive	Same as for Little Beaver. (Order 42-62.)	Waterflood of the Red River was commenced in April, 1965.
<b>LOGGE GRASS</b> Tensleep (Penn.)	3	Structural	Water Drive	(Tensleep) 160-acre spacing units; well locations vary according to areas; 250' topographic tolerance. (Orders 26-64, 26-65.)	None
<b>LOOKOUT BUTTE</b> Madison (Miss.) Silurian-Ordovician	12 67	Structural Structural	Water Drive Comb. Depletion and Water Drive	(Madison) State-wide spacing. (Silurian-Ordovician) 160-acre spacing; well location in center of SE 1/4 of each quarter section with 150' topographic tolerance. (Order 21-62.) Coral Creek Unit not subject to spacing rules. Re-delineated per Order 7-63.	Water disposal into Madison. (Order 68-62.) Waterflood of Silurian-Ordovician in Coral Creek Unit approved in 1966. (Order 35-66.)
<b>MASON LAKE</b> Lakota (Cret.)	2	Structural	Water Drive	State-wide.	None
<b>MELSTONE</b> Tyler (Penn.)	4	Structural and Strat.	Depletion	State-wide.	None
<b>MIDDLE BUTTE</b> Blackleaf (Cret.) (Gas)	4	Structural	Volumetric	(Bow Island) Gas: 320-acre spacing units consisting of E 1/2 & W 1/2 of each section; well location in center of either of the inside quarter-quarter sections located in E 1/2 of each spacing unit. 75' topographic tolerance. (Order 3-66.)	None
<b>MINERAL BENCH</b> Charles "C" Duperow (Miss. & Dev.)	1	Structural	Water Drive	State-wide.	Water disposal into Dakota-Lakota per Order 18-65.
<b>MINERS COULEE</b> Swift (U. Jur.)	6	Strat.	Depletion	(Sunburst-Swift) 40-acre spacing units consisting of quarter-quarter sections; well location no closer than 330' from lease or property line and 660' from any other well.	None
<b>MONARCH</b> Madison (Miss.)	2	Structural and Strat.	Water Drive	(Madison) 80-acre spacing units consisting of east and west halves of quarter section. Well location in SW 1/4 & NE 1/4 of quarter section. Location within 660' square at center of quarter-quarter section. (Order 18-61.)	Produced water is disposed into the salt water disposal system for the Pennel Field.

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
INTERLAKE, RED RIVER (Silurian, Ordovician)	14	Structural and Strat.		(Siluro-Ordovician) 160-acre spacing units consisting of a quarter section; well location in center of SW $\frac{1}{4}$ of quarter section with 175' topographic tolerance. (Orders 12-59, 4-63.)	
MOSSER Dakota (L. Cret.)	4	Structural	Water Drive	Spacing waived. Future development requires administrative approval of the Commission. (Order 27-62.)	None
MT. LILLY Madison (Miss.) (Gas)	2	Structural	Water Drive	(Madison) Gas: 640-acre, well location in approximate center of any of the four quarter-quarter sections adjoining center of section; 250' topographic tolerance. (Order 37-63.)	None
OUTLOOK Duperow (Dev.)	2	Strat. and Structural	Water Drive	(Duperow) State-wide spacing.	Produced water is disposed into Dakota and Siluro-Devonian formations. (Orders 16-59, 17-65, 36-66.)
Silurian-Devonian	9	Strat. and Structural	Water Drive	(Winnipegosis & Interlake) 160-acre spacing units; well location in center of either SW $\frac{1}{4}$ or NE $\frac{1}{4}$ of each quarter section; 175' topographic tolerance. (Order 19-59A.)	
OUTLOOK, SOUTH Winnipegosis (Dev.)	2	Structural	Water Drive	(Red River & Interlake-Winnipegosis) 160-acre spacing; permitted wells in either SW $\frac{1}{4}$ or NE $\frac{1}{4}$ of quarter section; 175' topographic tolerance. (Order 19-59A.)	Produced water disposed into Dakota formation. (Orders 19-59, 17-65.)
Red River (Ordovician)	1	Structural	Water Drive	(Winnipegosis) 160-acre spacing units consisting of quarter sections; permitted wells in either SW $\frac{1}{4}$ or NE $\frac{1}{4}$ with a tolerance of 175'. (Order 7-67.)	Produced water disposed into Dakota formation. (Order 42-66.)
OUTLOOK, WEST Winnipegosis (Dev.)	2	Structural	Water Drive	(Madison) 80-acre spacing units consisting of east and west half of quarter section; wells located in center of SE $\frac{1}{4}$ and NW $\frac{1}{4}$ of quarter sections with 150' topographic tolerance. (Order 15-61.)	Produced water is being injected into Siluro-Ordovician and Madison formations. (Orders 16-60, 46-62, 68-62, 36-63, 13-64.)
PENNEL Madison (Miss.)	8	Structural	Water Drive	(Siluro-Ordovician) 80-acre spacing units on west side and 160-acre spacing units on east side of pool. Wells to be located in SE $\frac{1}{4}$ and NW $\frac{1}{4}$ of each quarter section (80 acres) and in SE $\frac{1}{4}$ of each quarter section on 160-acre spacing. (Orders 1-56, 8-56, 15-61, 20-62, 4-63, 7-63.)	
Siluro-Ordovician	108	Structural	Comb. Depletion and Water Drive		
PINE Siluro-Ordovician	130	Structural	Comb. Depletion and Water Drive	Spacing and General Rules 213, 218 and 219 are waived within the Pine Unit. 80-acre spacing units outside of unit area; well location in NW $\frac{1}{4}$ and SE $\frac{1}{4}$ of quarter section; 150' topographic tolerance. (Order 37-62.)	A waterflood program was started in 1959. A waterflood of the north area was approved in 1967. (Orders 13-68, 1-60, 8-62, 32-67.)
Mission Canyon (Miss.)	1	Structural	Water Drive		

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>PLEVNA</b> Judith River, Eagle (Gas) (U. Cret.)	27	Structural	Water Drive	(Judith River, Eagle) Gas: 1200' from legal subdivision line; 2400' from other wells on same lease or unit; 75' topographic tolerance. (Orders 3-54, 4-57.)	None
<b>POLK CREEK</b> Amsden (Penn.)	4	Structural	Water Drive	State-wide.	None
<b>MONDERRA</b> Madison (Miss.)	283	Structural and Strat.	Comb. Depletion and Water Drive	(Ellis, Sawtooth-Madison) Oil: 220' from legal subdivision, 430' from other wells in same reservoir on same lease; 75' topographic tolerance. Porter Bench Extension: 330' from legal subdivision line; 650' from other wells in same reservoir on same lease or unit; 75' topographic tolerance. (Order 9-54.) Gas: 1320' from legal subdivision line; 3700' from other wells on same lease or unit; 75' topographic tolerance. (Order 9-54.) General Rules 207, 211, 219, 221, 223, and 224 do not apply.	Produced water injected into lower Madison. (Orders 11-56, 15-56, 4-65, 4-66.) A small waterflood project has been in operation since 1959.
<b>MONDERRA COULEE</b> Madison (Miss.)	4	Structural	Water Drive	330' from legal subdivision lines or upon a 10-acre spacing pattern; 75' topographic tolerance. (Order 5-62.)	None
<b>POPLAR, EAST</b> Madison (Miss.)	70	Structural	Water Drive	State-wide spacing; field delineated by Order 7-55.	Excess produced water has been injected into the Dakota and Judith River formations. (Orders 1-55, 5-57, 7-57, 14-61, 21-61, 34-61, 10-62.)
<b>POPLAR, NORTHWEST</b> Madison (Miss.)	5	Structural	Water Drive	80-acre spacing units consisting of E 1/2 and W 1/2 of each quarter section; permitted wells in NW 1/4 and SE 1/4 of quarter section. 75' topographic tolerance. (Order 18-55.)	None
<b>PRairie ELK</b> Charles "C" (Miss.)	2	Unknown	Water Drive	State-wide.	None
<b>RAGGED POINT</b> Tyler (Penn.)	13	Strat.	Depletion	Tyler: 40-acre spacing units; 75' topographic tolerance. (Order 8-59.) Spacing waived for Tyler "A" sand reservoir within Tyler "A" Sand Unit except no well can be closer than 660' to Unit boundary. (Order 35-65.) Kibbey: State-wide spacing. (Order 15-54.) Commencing of production from Tyler and Kibbey permitted in one well per Order 11-65.	A waterflood project of the Tyler "A" sand was commenced in February, 1966. (Order 35-65.) Water disposal into Kibbey. (Order 19-65.)
<b>RATTLESNAKE COULEE</b> Sunburst (L. Cret.)	1	Strat.	Depletion	State-wide.	None

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>REAGAN</b> Madison (Miss.)	47	Structural	Comb. Gas Cap and Water Drive	State-wide.	A pressure maintenance project utilizing gas injection was started in 1961. (Order 21-60.)
<b>RED CREEK</b> Cut Bank (L. Cret.)	10	Strat.	Depletion	(Madison, Sunburst & Cut Bank) 40-acre spacing units; well in center of spacing unit with 75' topographic tolerance; spacing waived for unitized portion. (Orders 16-58, 73-62, 31-64.)	Excess produced water injected into Bow Island and Madison. (Order 22-63, 37-64.) A waterflood project in the Cut Bank sand was initiated in June, 1965.
<b>RED FOX</b> Nisku (Dev.)	1	Structural	Water Drive	(Nisku) Field consists of one 160-acre spacing unit which straddles the section line. (Order 20-67.)	None
<b>REDSTONE</b> Winnipegosis (Dev.)	1 /	Unknown	Water Drive	State-wide.	None
<b>REPEAT</b> Red River (Ordovician)	1	Unknown	Water Drive	State-wide.	None
<b>RESERVE</b> Winnipegosis (Dev.)	3	Structure	Water Drive	(Interlake, Red River & Winnipegosis) 160-acre spacing units; permitted well within 1320' square in center of quarter section. Commingle of Red River and Interlake production permitted on individual well basis. (Orders 34-66, 27-67.)	None
<b>RICHEY</b> Charles (Miss.)	1	Structural	Water Drive	(Charles) 80-acre spacing units consisting of any two adjacent quarter-quarter sections; well locations in center of NW 1/4 and SE 1/4 of each quarter section; 75' topographic tolerance. (Order 21-55.)	Part of produced water is being injected into the Dakota formation. (Orders 10-58, 19-61.)
<b>RICHEY, SOUTHWEST</b> Interlake, Dawson Bay (Silurian, Devonian)	8	Structural	Depletion	(Devonian, Silurian, Ordovician) 160-acre spacing units; wells no closer than 900' from boundary of spacing unit. (Order 25-62.)	A waterflood project in the Interlake and Dawson Bay was started in 1965.
<b>RUDYARD</b> Sawtooth (Jurassic) (Gas)	3	Structural	Volumetric Shut-in	(Sawtooth) Gas: 640-acre spacing units consisting of one section; well location in center of NW 1/4 of section with 75' topographic tolerance. (Order 2-58.)	None
<b>SAND CREEK</b> Interlake, Red River (Silurian, Ordovician)	9	Structural	Water Drive	(Interlake and Red River) 80-acre spacing units consisting of any two adjacent quarter-quarter sections. Wells located in center of NW 1/4 and SE 1/4 of each quarter section. (Order 16-59.) Commingling of production from Interlake and Red River authorized per Order 49-62.	Excess produced water is injected into the Swift formation. (Order 9-61.)

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing and Field Rules	Secondary Recovery or Water Disposal
<b>SHOTGUN CREEK</b> Madison (Miss.)	1	Structural	Water Drive	State-wide.	None
<b>SIDNEY-BRORSON</b> Missionary (Miss.)	3	Structural	Water Drive	(Madison) 320-acre spacing units consisting of one-half section which may be either the east and west or north and south halves. Well location in NW $\frac{1}{4}$ and SE $\frac{1}{4}$ of each section; tolerance area consists of the center 40 acres in the NW $\frac{1}{4}$ or SE $\frac{1}{4}$ of each section. (Orders 30-62, 12-63.)	None
<b>SMOKE CREEK</b> McGowan (Miss.)	5	Structural	Water Drive	State-wide.	None
<b>SYNDER</b> Tensleep (Penn.)	4	Structural	Water Drive	10-acre spacing units with center 5-spot permitted; 150' topographic tolerance. (Order 45-62.)	None
<b>SOAP CREEK</b> Tensleep, Amsden, Madison (Penn., Miss.)	17	Structural	Water Drive	One well per 10-acre spacing unit per production formation; well location in center of spacing unit with 100' topographic tolerance. (Order 26-60.)	None
<b>SPRING LAKE</b> Nisku (Dev.)	1	Structural	Depletion	(Nisku, Red River) One well per 160-acre spacing unit. Well location anywhere within 840' square in center of spacing unit. (Order 6-63.)	None
<b>RED RIVER</b> Red River (Ordovician)	2	Structural	Depletion		
<b>STENSVAD</b> Tyler (Penn.)	24	Strat.	Depletion	40-acre spacing units; well location in center of spacing unit with 200' tolerance. (Orders 2-59, 7-60.) Wells may be drilled anywhere within waterflood unit boundary, no closer than 660' from unit boundary. (Order 5-65 Amended.)	A waterflood operation has been in progress since 1963. (Orders 53-62, 9-67.)
<b>SUMATRA</b> Tyler (Penn.) Amsden (Penn.)	85	Strat. Strat. and Structural	Depletion Water Drive	40-acre spacing units; well located in center of unit with 75' tolerance. (Order 14-58.)	N.W. Sumatra Unit waterflood approved in 1967.
<b>TULE CREEK</b> Nisku (Dev.)	7	Structural	Water Drive	(Nisku) 160-acre spacing units with permitted well anywhere within 1320' square in center of each unit. (Orders 26-62, 6-65.)	Produced water injected into Dakota & Judith River formations.
<b>TULE CREEK, EAST</b> Nisku (Dev.)	2	Structural	Water Drive	(Nisku) 160-acre spacing units with permitted well anywhere within 1320' square in center of each unit. (Orders 40-46, 6-65.)	None

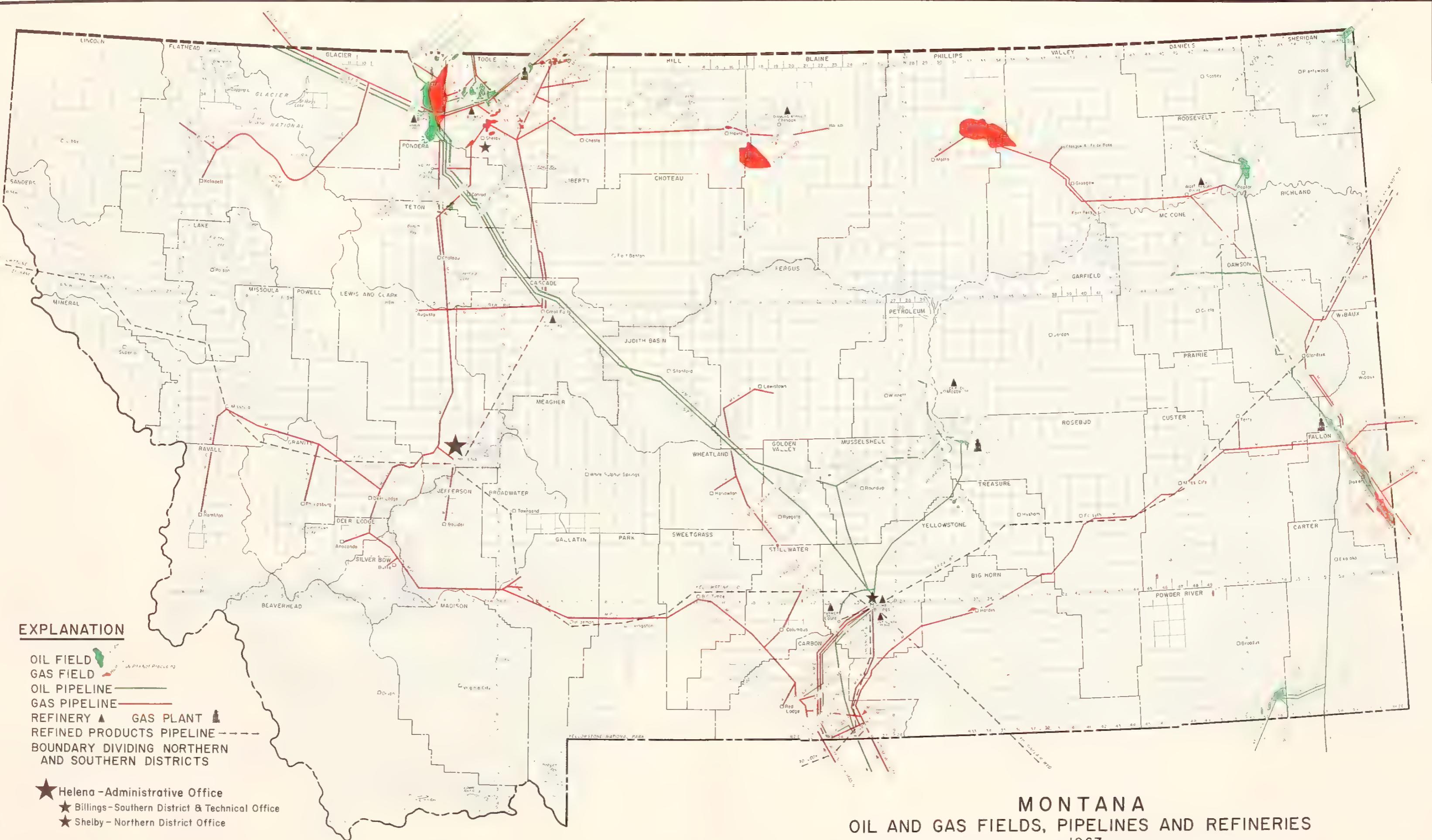
Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>TULE CREEK, SOUTH</b> Nisku (Dev.)	3	Structural	Water Drive	(Nisku) 160-acre spacing units with permitted well anywhere within a 1320' square in center of each unit.	Authority given to dispose of produced water into Dakota. (Order 44-64.)
<b>UTOPIA</b> Sawtooth, Madison (Gas) (Jurassic, Miss.)	6	Structural	Unknown	State-wide gas spacing.	None
<b>VIDA</b> Interlake (Silurian)	2	Structural	Water Drive	(Interlake) 160-acre spacing units with permitted well anywhere within an 840' square in center of each unit. (Order 39-63.)	None
<b>VOLT</b> Nisku (Dev.)	6	Structural	Water Drive	(Nisku) 160-acre spacing units with permitted well anywhere within a 1320' square in center of each unit. (Orders 27-64, 6-65.)	Excess produced water is disposed into Judith River. (Order 3-65.)
Charles (Miss.)	1	Structural	Water Drive	(Charles) State-wide spacing.	
<b>WEED CREEK</b> Amsden (L. Penn.)	4	Structural	Water Drive	State-wide.	None
<b>WELDON</b> Kibbey (Miss.)	16	Structural	Partial Water Drive	(Kibbey) 80-acre spacing unit; each quarter section divided into two separate units running in either a north-south or east-west direction; well location in center of NE 1/4 and SW 1/4 of quarter section with 200' topographic tolerance. (Order 9-65.)	Excess produced water is disposed into the Dakota and Morrison formations. (Orders 31-65, 47-65, 37-66.)
<b>WHITLASH</b> Blackleaf, Kootenai, Swift (Cretaceous, Jurassic)	44	Comb. Strat. and Struct.	Volumetric	Gas: 330' from legal subdivision line and 2400' between wells; 75' topographic tolerance. Oil: 330' from legal subdivision line and 650' between wells; 5-spot location at center of 40-acre tract permitted; 75' topographic tolerance. General Rules 207, 211, 219, 221, 223, and 224 suspended. (Order 16-54.)	Gas: 330' from legal subdivision line and 2400' between wells; 75' topographic tolerance. Oil: 330' from legal subdivision line, 650' between wells in same reservoir on same lease; 5-spot location permitted. (Order 61-62.)
<b>WHITLASH, WEST</b> Sunburst, Swift (Cretaceous, Jurassic)	15	Structural and Strat.	Volumetric		Gas: 160-acre spacing units consisting of quarter sections; well location anywhere within a 660' square in center of spacing unit. Oil: 330' from legal subdivision line, 650' between wells in same reservoir on same lease; 5-spot location permitted. (Order 61-62.)

Field, Formation	No. Prod. Wells	Type of Trap	Probable Drive Mechanism	Spacing Regulations and Field Rules	Secondary Recovery or Water Disposal
<b>WILLS GREEK, SOUTH</b> Siluro-Ordovician	2	Structural	Partial Water Drive	(Siluro-Ordovician) 160-acre spacing units. Well location in center of $SE\frac{1}{4}$ of each unit with 175' topographic tolerance. (Orders 5-64, 30-66.)	None
<b>WOLF SPRINGS</b> Amsden (Penn.)	10	Structural	Water Drive	(Amsden) 80-acre spacing units consisting of $N\frac{1}{2}$ and $S\frac{1}{2}$ of each quarter section. Well location in center of $NW\frac{1}{4}$ and $SE\frac{1}{4}$ of each quarter section with 75' topographic tolerance. (Orders 4-56, 9-59.)	None
<b>WOODROW</b> Charles, Duperow, Interlake, Red River (Miss., Dev., Silurian, Ordovician)	6	Structural	Water Drive	80-acre spacing units consisting of any two adjacent quarter-quarter sections; well locations in center of $NE\frac{1}{4}$ and $SW\frac{1}{4}$ of each quarter section with 200' topographic tolerance. (Order 47-62.)	Produced water injected into Dakota. (Order 48-62.)

# STATE OF MONTANA - SUMMARY OF PRODUCING OIL FIELDS

LINE NO.	FIELD (OR POOL)	COUNTY	YEAR DISCOVERED	PRODUCTION FORMATION	APPROX. DEPTH	A.P.I. GRAVITY	VOLUME FACTOR FT.	AVG. NET PAY	AVG. CONNATE WATER %	ORIGINAL OIL IN PLACE BBLs/ACRE	PRODUCTIVE AREA 1-1-68 ACRES	ORIGINAL OIL IN PLACE 1000 BBLs.	ESTIMATED RECOVERY %	ORIGINAL RESERVES 1000 BBLs.	TOTAL ORIGINAL RESERVES 1-1-68 1000 BBLs.	CUMULATIVE PRODUCTION 1000 BBLs.	REMAINING RESERVES 1-1-68 1000 BBLs.	1967 PRODUCTION			CUMULATIVE RECOVERABLE RESERVES				
																		PRIMARY	SECONDARY	1000 BBLs.	DAILY BBLs.	AVG. BBLs./ACRE FT.	LINE NO.		
1	Ash Creek (Montana)	Big Horn	1952	Shannon (U. Cret.)	4500	34	1.05	14	22	42	13,199	200	2,640	25	6	660	158	818	580	238	54,431	149	4,090	292	1
2	Bears Den	Liberty	1924	Sunburst (L. Cret.)	2300	39	1.08	20	12	35	11,205	200	2,241	17	--	381	381	310	71	15,090	41	1,905	95	2	
3	Bell Creek	Powder River	1967	Muddy (Cret.)	4400	32	1,086	11.3	28	23	17,402	7,600	132,255	30	20	39,677	26,451	66,128	1,711	64,417	1,671,277	9,284	8,701	770	3
4	Benrud	Roosevelt	1961	Nisku (Dev.)	7650	43	1.41	22	16	30	13,557	80	1,085	20	--	217	217	155	62	16,915	46	2,713	123	4	
5	Benrud, East	Roosevelt	1962	Nisku (Dev.)	7500	46	1.37	35	15	30	20,811	160	3,330	42	--	1,099	1,099	733	366	101,166	278	6,820	196	5	
6	Benrud, Northeast	Roosevelt	1964	Nisku (Dev.)	7620	46	1.4	45	15.5	30	20,054	160	4,329	28	--	1,312	1,312	581	521	152,099	417	7,575	168	6	
7	Big Wall	Musselshell	1948	Tyler (Penn.)	3000	31	1.02	22	17	40	17,068	1,220	20,821	31	5	6,455	1,041	7,496	5,148	2,348	264,502	725	6,144	279	7
8	Big Wall	Musselshell	1953	Amsden (Penn.)	2500	19	1.61	17	16	35	8,517	280	2,385	24	--	572	572	520	40,049	110	2,043	120	8		
9	Blackfoot	Glacier	1955	Madison (Miss.)	3550	25	1.15	8	14	40	4,533	480	2,176	32	--	696	696	1,023	860	1,023	41,849	115	1,450	181	9
10	Blackfoot	Glacier	1955	Cut Bank (L. Cret.)	1500	30	1.11	15	15	35	10,221	160	1,635	20	--	327	327	20	163	163	2,044	136	10	10	10
11	Bowes	Blaine	1949	Sawtooth (M. Jur.)	1250	19	1.02	37	11	7	22,718	3,750	85,420	8	2	8,434	1,701	8,702	7,710	1,782	175,297	491	2,1	11	11
12	Cabin Creek	Fallon	1953	Siluro-Ordovician	8400	33	1.20	50	13	30	29,415	7,620	224,142	22	8	49,311	17,931	67,242	38,254	28,988	2,474,961	6,781	0,824	176	12
13	Cabin Creek	Fallon	1956	Mission Canyon (Miss.)	7300	33	1.13	25	11	30	13,215	2,259	29,853	35	--	10,449	10,449	10,449	6,753	3,696	922,686	2,528	4,625	185	13
14	Cat Creek (West Dome)	Petroleum	1920	Kootenai (L. Cret.)	1100	52	1.10	51	21	19	--	975	59,650	25	14	14,913	8,351	23,264	16,631	6,633	105,330	289	23,360	468	14
15	Cat Creek (Antelope-Mosby)	Petroleum, Garfield	1920	Kootenai (L. Cret.)	1225	52	1.10	10	21	19	11,997	200	2,399	22	11	528	528	264	1,813	1,813	84,561	214	1,781	396	15
16	Cat Creek	Petroleum, Garfield	1945	Morrison (U. Jur.)	1600	52	1.10	6	22	40	5,596	240	1,340	32	--	428	428	6,249	4,410	1,813	84,561	214	1,781	397	17
17	Cat Creek	Petroleum, Garfield	1945	Ellis (U. Jur.)	1750	52	1.10	25	18	40	19,050	880	16,764	30	--	5,029	5,029	5,029	1,715	1,715	229	1	1	1	1
18	Cat Creek	Petroleum	1967	Amsden (Penn.)	2025	52	1.0	10	8	30	4,344	40	1,176	20	--	35	35	35	875	875	875	875	875	875	1
19	Cat Bank	Glacier, Toole	1932	Kootenai (L. Cret.)	2900	38	1.09	18	15	35	12,492	49,000	612,108	20	11	122,422	67,332	189,154	103,810	85,944	3,259,060	8,929	3,873	215	15
20	Cat Bank	Glacier, Toole	1945	Madison (Miss.)	3000	39	1.10	10	14	30	6,911	3,200	22,115	28	--	6,192	6,192	5,117	5,117	5,117	133,174	37	1,315	194	26
21	Dear Creek	Dawson	1952	Red River (U. Ord.)	9500	41	1.2	90	7	30	28,530	400	11,412	15	--	1,712	1,712	1,075	943	23,279	65	4,279	44	21	
22	Dear Creek	Dawson	1956	Interlake (S11.)	9440	43	1.2	38	6.7	10	11,514	320	3,694	34	--	1,253	1,253	1,070	183	11,384	33	3,911	103	27	
23	Dryer	Sheridan	1960	Mission Canyon (Miss.)	8000	33	1.12	30	11	8	11,031	4,800	52,963	9	--	4,767	4,767	1,755	1,012	274,074	751	1,993	33	23	
24	Elk Basin (Montana Portion)	Carbon	1915	Frontier (U. Cret.)	1200	45	1.16	30	21	20	33,720	120	4,046	33	--	1,135	1,135	1,299	6	2,124	371	1,125	74	24	
25	Elk Basin (Montana Portion)	Carbon	1942	Embar-Tensleep (Perm.-Penn.)	5000	29	1.16	124	19.5	19	28,168	1,376	107,34	--	57	57	14,45	43,48	17,117	1,807,806	4,253	4,630	310	2	
26	Elk Basin (Montana Portion)	Carbon	1946	Madison (Miss.)	5300	28	1.12	224	12	9	169,434	920	155,879	24	4	37,411	6,235	63,446	12,273	31,373	1,025,472	2,207	47,441	212	21
27	Elk Basin, Northwest	Carbon	1947	Frontier (U. Cret.)	3375	47	1.29	28	19	30	22,394	120	2,687	25	21	672	672	1,736	1,049	187	28,900	79	10,300	368	27
28	Elk Basin, Northwest	Carbon	1947	Madison (Miss.)	6215	35	1.08	124	12	35	69,477	200	11,895	13	--	1,806	1,806	851	955	14,567	40	9,030	73	29	
29	Elk Basin, Northwest	Carbon	1964	Embar-Tensleep (Perm.-Penn.)	6000	37	1.15	27	11.5	22	16,338	580	9,471	15	13	1,									







# GENERALIZED STRATIGRAPHIC CORRELATION CHART

SHOWING PRODUCING HORIZONS — MONTANA OIL AND GAS FIELDS, 1967

